

SECTION 6.3

ARCHITECTURAL COATINGS

(Revised December 1995; Reissued January 1998)

EMISSION INVENTORY SOURCE CATEGORY

Solvent Evaporation

EMISSION INVENTORY CODES (CES CODES) AND DESCRIPTION

520-520-9200-0000 (46755) Water-Based Architectural Coatings

520-520-9100-0000 (46763) Oil-Based Architectural Coatings

520-522-8300-0000 (46771) Cleanup & Thinning Solvents

METHODS AND SOURCES

The methodology described below is used to estimate emissions of total organic gases (TOG) resulting from the use of **oil-based** and **water-based** architectural and industrial maintenance coatings and the associated use of **cleanup and thinning solvents**. Only the non-aerosol type of architectural and industrial maintenance coatings are included. Aerosol coatings are covered under the Consumer Products category.

Architectural coatings are coatings applied to stationary structures and their accessories, to mobile homes, pavements, or curbs. Industrial maintenance coatings, are high performance coatings formulated for and applied to substrates in industrial, commercial, or institutional situations exposed to extreme environmental conditions (e.g., immersion in water, chronic exposure to corrosive agents, repeated heavy abrasion).

Annual average emission estimates of TOG for the year 1990 were derived from data obtained through a survey of manufacturers of architectural and industrial maintenance coatings conducted by the Stationary Source Division of the Air Resources Board. ¹

The results of the survey showed that 77.1 million gallons of coatings were sold in California in 1990. **Water-based** coatings (29 different types) accounted for 76% of the sales, while **oil-based** coatings (33 different types) accounted for 24% of the sales. The amounts of these

coatings sold in each county (hereon referred to as process rates) were estimated as follows: Data representing the total number of housing units in each county, obtained from the Demographic Research Unit of the Department of Finance ³, was divided by the total number of housing units in the State. This number was then multiplied by the total number of gallons sold in California of **water-based** and **oil-based** paints respectively.

The estimated statewide average Volatile Organic Gas (VOC) emission factor for **water-based** coatings is 440.24 pounds per 1,000 gallons. The statewide emission factor for **oil-based** coatings is 2,867.57 pounds per 1,000 gallons. Each of these statewide average emission factors was derived by dividing the total statewide amount of VOC emissions by the statewide sales data listed in the survey report. ¹ TOG emissions were estimated by dividing VOC emissions by the Fraction of Reactive Organic Gases (FROG) derived from information on the chemical composition (VOC speciation profile). ² The FROG used for **water-based** coatings is 0.9444, for **oil-based** coatings 0.9680.

TOG emissions from **cleanup and thinning solvents** were estimated based on the assumption that 1 pint of thinner with a TOG emission factor of 6,400 pounds per 1,000 gallons is used per gallon of oil-based coating. ⁴

Statewide TOG emissions are summarized in Table I. County-wide TOG emissions are presented in Tables II, III, and IV.

Table I : 1990 Statewide Architectural Coatings Emissions Data

Category	Process Rate (1,000 gal)	Emission Factor (lbs / 1,000 gal)	VOC Emissions (Tons / year)	TOG Emissions (Tons / year)
Water-Based Ctgs	58,796	(VOC) 438.13	12,880	13,638
Oil-Based Ctgs	18,260	(VOC) 2,867.57	26,181	27,046
Cleanup/Thinning	2,283	(TOG) 6,400.00		7,306

ASSUMPTIONS

1. The 1990 emissions from the use of architectural coatings in California can be estimated from data found in the 1993 survey report. ¹
2. The amount of coatings sold is equal to the amount used.
3. Paint cleanup and thinning solvents are used at the rate of one pint per gallon of oil-based coating. ⁴
4. Paint cleanup and thinning solvents have a density of 770 g/l. ⁴
5. Statewide architectural coatings usage can be apportioned to the counties using numbers of housing units.

CHANGES IN METHODOLOGY

The 1989 emission inventory was based on 1984 sales and VOC emissions data obtained through a survey of architectural coatings manufacturers conducted by the Air Resources Board. The 1990 inventory is based on 1990 sales and emissions data obtained from a more recent survey also conducted by the Air Resources Board.

For the 1989 inventory, statewide emissions were apportioned to each county based on county population. For the 1990 inventory, the total number of housing units in each county is used to apportion emissions to the counties. The number of housing units correlates better with architectural coatings usage than population does.

COMMENTS AND RECOMMENDATIONS

To more accurately estimate TOG emissions from all these categories ARB staff is in the process of developing improved chemical speciation profiles based on recently completed research contracts and on-going survey data. Information on use of cleanup and thinning solvents, specific types and amounts of solvents used, density and emission factors will also be obtained.

DIFFERENCES BETWEEN 1990 AND 1989 EMISSION ESTIMATES

The 1990 TOG emissions from these three categories are lower than the 1989 emissions. Emissions from the usage of water-based coatings increased slightly (13%), while emissions from the use of oil-based coatings decreased significantly (46%). VOC emission factors for both coatings categories decreased. Usage of oil-based coatings also decreased. Usage of

water-based coatings increased. The ratio of water-based coatings sales over oil-based coatings sales is 3.22 for 1990 in contrast to 1.78 for 1989. Consequently, sales of cleaning and thinning solvents used in conjunction with oil-based coatings also decreased.

TEMPORAL ACTIVITY

The application of architectural coatings is assumed to be highest during the summer and lowest in the winter. The weekly activity occurs primarily during weekdays. The daily activity occurs primarily during daylight hours.

SAMPLE CALCULATIONS

To estimate 1990 TOG emissions from the use of water-based coatings in Sacramento County:

1. Determine the 1990 quantity of water-based coatings sold in Sacramento County. The Department of Finance Report lists 419,288 housing units in Sacramento County for 1990. Derive the process rate by dividing the housing units in Sacramento County by the total number of housing units in the State. Multiply this fraction by the statewide architectural coatings sales during 1990.

$$\frac{\text{Housing Units in Sacramento Co.}}{\text{Housing Units in California}} \times \text{Total Gallons sold in CA} = \text{Total Gallons sold in Sacramento Co.}$$

$$\frac{419,288}{11,206,393} \times 58,796,000 \text{ gal} = 2,199,857 \text{ gal}$$

2. Estimate VOC emissions.

$$\text{Process Rate} \times \text{VOC Emissions Factor} = \text{VOC Emissions from Sacto. Co.}$$

$$\frac{2,199,857 \text{ gal} \times 438.13 \text{ lb}/1000 \text{ gal}}{2,000 \text{ lb}/\text{ton}} = 481.91 \text{ tpy}$$

3. Estimate TOG emissions.

$$\text{VOC Emissions}/\text{FROG} = \text{TOG Emissions}$$

$$481.91 \text{ tpy}/0.9444 = 510.28 \text{ tpy}$$

ADDITIONAL CODES

Category	Growth Code	Control Code	VOC Speciation Profile
<i>Water-Based Ctgs</i>	912	302	717
<i>Oil-Based Ctgs</i>	911	801	196
<i>Cleanup/Thinning</i>	911	303	600

REFERENCES

1. California Environmental Protection Agency, Air Resources Board, Survey of Emissions from Solvent Use, Volume II: Architectural Coatings, Contract No. A132-086 (September 1994).
2. California Air Resources Board, Identification of Volatile Organic Compound Species Profiles, Volume 1 (August 1991).
3. Department of Finance, Demographic Research Unit, California Population and Housing Estimates, Report E-5 (July 7, 1989).
4. Air Resources Board, Methods for Assessing Area Source Emissions in California (December 1984).

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Table II
 1990 Area Source Emissions
 Activity: Unspecified Activities
 Process: Surface Coating
 Entrainment: Water Based-Evap
 Dimn: Architectural
 CES: 46755

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	TOG Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)	
GBV	ALPINE	6.5	1.5	0.00	0.00	0.00	0.00	
	INYO	49.6	11.5	0.00	0.00	0.00	0.00	
	MONO	55.4	12.8	0.00	0.00	0.00	0.00	
LC	LAKE	155.5	36.1	0.00	0.00	0.00	0.00	
LT	EL DORADO	70.1	16.3	0.00	0.00	0.00	0.00	
	PLACER	24.2	5.6	0.00	0.00	0.00	0.00	
MC	AMADOR	65.8	15.3	0.00	0.00	0.00	0.00	
	CALAVERAS	101.5	23.5	0.00	0.00	0.00	0.00	
	EL DORADO	248.6	57.7	0.00	0.00	0.00	0.00	
	MARIPOSA	42.5	9.9	0.00	0.00	0.00	0.00	
	NEVADA	188.1	43.6	0.00	0.00	0.00	0.00	
	PLACER	40.3	9.4	0.00	0.00	0.00	0.00	
	PLUMAS	62.2	14.4	0.00	0.00	0.00	0.00	
	SIERRA	11.0	2.6	0.00	0.00	0.00	0.00	
	TUOLUMNE	132.8	30.8	0.00	0.00	0.00	0.00	
	NC	DEL NORTE	48.2	11.2	0.00	0.00	0.00	0.00
HUMBOLDT		265.7	61.6	0.00	0.00	0.00	0.00	
MENDOCINO		181.5	42.1	0.00	0.00	0.00	0.00	
SONOMA		109.9	25.5	0.00	0.00	0.00	0.00	
TRINITY		39.6	9.2	0.00	0.00	0.00	0.00	
NCC	MONTEREY	637.0	147.8	0.00	0.00	0.00	0.00	
	SAN BENITO	65.0	15.1	0.00	0.00	0.00	0.00	
	SANTA CRUZ	479.0	111.1	0.00	0.00	0.00	0.00	
NEP	LASSEN	56.6	13.1	0.00	0.00	0.00	0.00	
	MODOC	24.4	5.7	0.00	0.00	0.00	0.00	
	SISKIYOU	111.6	25.9	0.00	0.00	0.00	0.00	
SC	LOS ANGELES	16154.0	3747.1	0.00	0.00	0.00	0.00	
	ORANGE	4566.3	1059.2	0.00	0.00	0.00	0.00	
	RIVERSIDE	1818.2	421.8	0.00	0.00	0.00	0.00	
	SAN BERNARDINO	2203.9	511.2	0.00	0.00	0.00	0.00	
SCC	SAN LUIS OBISPO	469.1	108.8	0.00	0.00	0.00	0.00	
	SANTA BARBARA	706.1	163.8	0.00	0.00	0.00	0.00	
	VENTURA	1192.0	276.5	0.00	0.00	0.00	0.00	
SD	SAN DIEGO	4965.2	1151.7	0.00	0.00	0.00	0.00	
SED	IMPERIAL	194.6	45.2	0.00	0.00	0.00	0.00	
	KERN	158.6	36.8	0.00	0.00	0.00	0.00	
	LOS ANGELES	499.6	115.9	0.00	0.00	0.00	0.00	
	RIVERSIDE	672.5	156.0	0.00	0.00	0.00	0.00	
	SAN BERNARDINO	658.3	152.7	0.00	0.00	0.00	0.00	
SF	ALAMEDA	2657.2	616.4	0.00	0.00	0.00	0.00	
	CONTRA COSTA	1651.2	383.0	0.00	0.00	0.00	0.00	
	MARIN	531.3	123.2	0.00	0.00	0.00	0.00	
	NAPA	240.0	55.7	0.00	0.00	0.00	0.00	
	SAN FRANCISCO	1730.2	401.3	0.00	0.00	0.00	0.00	
	SAN MATEO	1328.3	308.1	0.00	0.00	0.00	0.00	
	SANTA CLARA	2818.6	653.8	0.00	0.00	0.00	0.00	
	SOLANO	439.6	102.0	0.00	0.00	0.00	0.00	
	SONOMA	735.3	170.6	0.00	0.00	0.00	0.00	
	SJV	FRESNO	1262.4	292.8	0.00	0.00	0.00	0.00
KERN		898.8	208.5	0.00	0.00	0.00	0.00	
KINGS		168.3	39.0	0.00	0.00	0.00	0.00	
MADERA		169.2	39.3	0.00	0.00	0.00	0.00	
MERCED		315.2	73.1	0.00	0.00	0.00	0.00	
SAN JOAQUIN		883.0	204.8	0.00	0.00	0.00	0.00	
STANISLAUS		714.4	165.7	0.00	0.00	0.00	0.00	
TULARE		556.1	129.0	0.00	0.00	0.00	0.00	
SV		BUTTE	406.9	94.4	0.00	0.00	0.00	0.00
		COLUSA	32.3	7.5	0.00	0.00	0.00	0.00
	GLENN	51.3	11.9	0.00	0.00	0.00	0.00	
	PLACER	338.8	78.6	0.00	0.00	0.00	0.00	
	SACRAMENTO	2199.9	510.3	0.00	0.00	0.00	0.00	
	SHASTA	324.5	75.3	0.00	0.00	0.00	0.00	
	SOLANO	179.6	41.7	0.00	0.00	0.00	0.00	
	SUTTER	127.9	29.7	0.00	0.00	0.00	0.00	
	TEHAMA	110.0	25.5	0.00	0.00	0.00	0.00	
	YOLO	278.0	64.5	0.00	0.00	0.00	0.00	
YUBA	117.1	27.2	0.00	0.00	0.00	0.00		
TOTAL		58796.4	13638.4	0.00	0.00	0.00	0.00	

Fraction of Reactive Organic Gases (FROG): .9444 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 (FRPM10): .6800 (PM10 Emissions = PM x FRPM10)

Table III
 1990 Area Source Emissions
 Activity: Unspecified Activities
 Process: Surface Coating
 Entrainment: Oil Based-Evap
 Dimn: Architectural
 CES: 46763

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	TOG Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)
GBV	ALPINE	2.0	3.0	0.00	0.00	0.00	0.00
	INYO	15.4	22.8	0.00	0.00	0.00	0.00
	MONO	17.2	25.5	0.00	0.00	0.00	0.00
LC	LAKE	48.3	71.5	0.00	0.00	0.00	0.00
LT	EL DORADO	21.8	32.3	0.00	0.00	0.00	0.00
	PLACER	7.5	11.1	0.00	0.00	0.00	0.00
MC	AMADOR	20.4	30.3	0.00	0.00	0.00	0.00
	CALAVERAS	31.5	46.7	0.00	0.00	0.00	0.00
	EL DORADO	77.2	114.4	0.00	0.00	0.00	0.00
	MARIPOSA	13.2	19.5	0.00	0.00	0.00	0.00
	NEVADA	58.4	86.5	0.00	0.00	0.00	0.00
	PLACER	12.5	18.6	0.00	0.00	0.00	0.00
	PLUMAS	19.3	28.6	0.00	0.00	0.00	0.00
	SIERRA	3.4	5.1	0.00	0.00	0.00	0.00
	TUOLUMNE	41.3	61.1	0.00	0.00	0.00	0.00
	NC	DEL NORTE	15.0	22.2	0.00	0.00	0.00
HUMBOLDT		82.5	122.2	0.00	0.00	0.00	0.00
MENDOCINO		56.4	83.5	0.00	0.00	0.00	0.00
NCC	SONOMA	34.1	50.5	0.00	0.00	0.00	0.00
	TRINITY	12.3	18.2	0.00	0.00	0.00	0.00
	MONTEREY	197.8	293.0	0.00	0.00	0.00	0.00
NEP	SAN BENITO	20.2	29.9	0.00	0.00	0.00	0.00
	SANTA CRUZ	148.7	220.3	0.00	0.00	0.00	0.00
	LASSEN	17.6	26.0	0.00	0.00	0.00	0.00
SC	MODOC	7.6	11.2	0.00	0.00	0.00	0.00
	SISKIYOU	34.7	51.3	0.00	0.00	0.00	0.00
	LOS ANGELES	5016.9	7430.9	0.00	0.00	0.00	0.00
SCC	ORANGE	1418.1	2100.5	0.00	0.00	0.00	0.00
	RIVERSIDE	564.7	836.4	0.00	0.00	0.00	0.00
	SAN BERNARDINO	684.5	1013.8	0.00	0.00	0.00	0.00
	SAN LUIS OBISPO	145.7	215.8	0.00	0.00	0.00	0.00
SD	SANTA BARBARA	219.3	324.8	0.00	0.00	0.00	0.00
	VENTURA	370.2	548.3	0.00	0.00	0.00	0.00
	SAN DIEGO	1542.0	2284.0	0.00	0.00	0.00	0.00
SED	IMPERIAL	60.4	89.5	0.00	0.00	0.00	0.00
	KERN	49.3	73.0	0.00	0.00	0.00	0.00
	LOS ANGELES	155.2	229.8	0.00	0.00	0.00	0.00
	RIVERSIDE	208.9	309.3	0.00	0.00	0.00	0.00
	SAN BERNARDINO	204.4	302.8	0.00	0.00	0.00	0.00
SF	ALAMEDA	825.2	1222.3	0.00	0.00	0.00	0.00
	CONTRA COSTA	512.8	759.6	0.00	0.00	0.00	0.00
	MARIN	165.0	244.4	0.00	0.00	0.00	0.00
	NAPA	74.5	110.4	0.00	0.00	0.00	0.00
	SAN FRANCISCO	537.3	795.9	0.00	0.00	0.00	0.00
	SAN MATEO	412.5	611.0	0.00	0.00	0.00	0.00
	SANTA CLARA	875.4	1296.6	0.00	0.00	0.00	0.00
	SOLANO	136.5	202.2	0.00	0.00	0.00	0.00
	SONOMA	228.4	338.3	0.00	0.00	0.00	0.00
	SV	FRESNO	392.0	580.7	0.00	0.00	0.00
KERN		279.1	413.4	0.00	0.00	0.00	0.00
KINGS		52.3	77.4	0.00	0.00	0.00	0.00
MADERA		52.5	77.8	0.00	0.00	0.00	0.00
MERCED		97.9	145.0	0.00	0.00	0.00	0.00
SAN JOAQUIN		274.2	406.2	0.00	0.00	0.00	0.00
STANISLAUS		221.9	328.6	0.00	0.00	0.00	0.00
TULARE		172.7	255.8	0.00	0.00	0.00	0.00
BUTTE		126.4	187.2	0.00	0.00	0.00	0.00
COLUSA		10.0	14.9	0.00	0.00	0.00	0.00
SV	GLENN	15.9	23.6	0.00	0.00	0.00	0.00
	PLACER	105.2	155.8	0.00	0.00	0.00	0.00
	SACRAMENTO	683.2	1011.9	0.00	0.00	0.00	0.00
	SHASTA	100.8	149.3	0.00	0.00	0.00	0.00
	SOLANO	55.8	82.6	0.00	0.00	0.00	0.00
	SUTTER	39.7	58.8	0.00	0.00	0.00	0.00
	TEHAMA	34.2	50.6	0.00	0.00	0.00	0.00
	YOLO	86.3	127.9	0.00	0.00	0.00	0.00
	YUBA	36.4	53.9	0.00	0.00	0.00	0.00
	TOTAL		18260.0	27046.4	0.00	0.00	0.00

Fraction of Reactive Organic Gases (FROG): .9680 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10: .9600 (PM10 Emissions = PM x FRPM10)

Table IV
 1990 Area Source Emissions
 Activity: Unspecified Activities
 Process: Surface Coating
 Entrainment: Solvent-Evap
 Dimn: Thinning Cleaning
 CES: 46771

Process Rate Unit: 1000 Gallons of Coating

AB	County	Process Rate	TOG Emis. (Tons / Year)	CO Emis. (Tons / Year)	NOX Emis. (Tons / Year)	SOX Emis. (Tons / Year)	PM Emis. (Tons / Year)	
GBV	ALPINE	0.3	0.8	0.00	0.00	0.00	0.00	
	INYO	1.9	6.2	0.00	0.00	0.00	0.00	
	MONO	2.2	6.9	0.00	0.00	0.00	0.00	
LC	LAKE	6.0	19.3	0.00	0.00	0.00		
LT	EL DORADO	2.7	8.7	0.00	0.00	0.00	0.00	
	PLACER	0.9	3.0	0.00	0.00	0.00	0.00	
MC	AMADOR	2.6	8.2	0.00	0.00	0.00	0.00	
	CALAVERAS	3.9	12.6	0.00	0.00	0.00	0.00	
	EL DORADO	9.7	30.9	0.00	0.00	0.00	0.00	
	MARIPOSA	1.7	5.3	0.00	0.00	0.00	0.00	
	NEVADA	7.3	23.4	0.00	0.00	0.00	0.00	
	PLACER	1.6	5.0	0.00	0.00	0.00	0.00	
	PLUMAS	2.4	7.7	0.00	0.00	0.00	0.00	
	SIERRA	3.4	1.4	0.00	0.00	0.00	0.00	
	TUOLUMNE	5.2	16.5	0.00	0.00	0.00	0.00	
	NC	DEL NORTE	1.9	5.9	0.00	0.00	0.00	0.00
HUMBOLDT		10.3	33.0	0.00	0.00	0.00	0.00	
MENDOCINO		7.1	22.5	0.00	0.00	0.00	0.00	
SONOMA		4.3	13.7	0.00	0.00	0.00	0.00	
TRINITY		1.5	4.9	0.00	0.00	0.00	0.00	
NCC	MONTEREY	24.7	79.1	0.00	0.00	0.00	0.00	
	SAN BENITO	2.5	8.1	0.00	0.00	0.00	0.00	
	SANTA CRUZ	18.6	59.5	0.00	0.00	0.00	0.00	
NEP	LASSEN	2.2	7.0	0.00	0.00	0.00	0.00	
	MODOC	1.0	3.0	0.00	0.00	0.00	0.00	
	SISKIYOU	4.3	13.9	0.00	0.00	0.00	0.00	
SC	LOS ANGELES	627.1	2006.8	0.00	0.00	0.00	0.00	
	ORANGE	177.3	567.3	0.00	0.00	0.00	0.00	
	RIVERSIDE	70.6	225.9	0.00	0.00	0.00	0.00	
	SAN BERNARDINO	85.6	273.8	0.00	0.00	0.00	0.00	
SCC	SAN LUIS OBISPO	18.2	58.3	0.00	0.00	0.00	0.00	
	SANTA BARBARA	27.4	87.7	0.00	0.00	0.00	0.00	
	VENTURA	46.3	148.1	0.00	0.00	0.00	0.00	
SD	SAN DIEGO	192.8	616.8	0.00	0.00	0.00	0.00	
SED	IMPERIAL	7.6	24.2	0.00	0.00	0.00	0.00	
	KERN	6.2	19.7	0.00	0.00	0.00	0.00	
	LOS ANGELES	19.4	62.1	0.00	0.00	0.00	0.00	
	RIVERSIDE	26.1	83.5	0.00	0.00	0.00	0.00	
	SAN BERNARDINO	25.6	81.8	0.00	0.00	0.00	0.00	
SF	ALAMEDA	103.2	330.1	0.00	0.00	0.00	0.00	
	CONTRA COSTA	64.1	205.1	0.00	0.00	0.00	0.00	
	MARIN	20.6	66.0	0.00	0.00	0.00	0.00	
	NAPA	9.3	29.8	0.00	0.00	0.00	0.00	
	SAN FRANCISCO	67.2	214.9	0.00	0.00	0.00	0.00	
	SAN MATEO	51.6	165.0	0.00	0.00	0.00	0.00	
	SANTA CLARA	109.4	350.2	0.00	0.00	0.00	0.00	
	SOLANO	17.1	54.6	0.00	0.00	0.00	0.00	
	SONOMA	28.6	91.4	0.00	0.00	0.00	0.00	
	SJV	FRESNO	49.0	156.8	0.00	0.00	0.00	0.00
KERN		34.9	111.7	0.00	0.00	0.00	0.00	
KINGS		6.5	20.9	0.00	0.00	0.00	0.00	
MADERA		6.6	21.0	0.00	0.00	0.00	0.00	
MERCED		12.2	39.2	0.00	0.00	0.00	0.00	
SAN JOAQUIN		34.3	109.7	0.00	0.00	0.00	0.00	
STANISLAUS		27.7	88.7	0.00	0.00	0.00	0.00	
TULARE		21.6	69.1	0.00	0.00	0.00	0.00	
SV		BUTTE	15.8	50.1	0.00	0.00	0.00	0.00
		COLUSA	1.3	4.0	0.00	0.00	0.00	0.00
	GLENN	2.0	6.4	0.00	0.00	0.00	0.00	
	PLACER	13.2	42.1	0.00	0.00	0.00	0.00	
	SACRAMENTO	85.4	273.3	0.00	0.00	0.00	0.00	
	SHASTA	12.6	40.3	0.00	0.00	0.00	0.00	
	SOLANO	7.0	22.3	0.00	0.00	0.00	0.00	
	SUTTER	5.0	15.9	0.00	0.00	0.00	0.00	
	TEHAMA	4.3	13.7	0.00	0.00	0.00	0.00	
	YOLO	10.8	34.5	0.00	0.00	0.00	0.00	
	YUBA	4.6	14.6	0.00	0.00	0.00	0.00	
TOTAL		2283.0	7306.0	0.00	0.00	0.00	0.00	

Fraction of Reactive Organic Gases (FROG): .6986 (Reactive Organic Gases (ROG) Emissions = TOG X FROG)
 Fraction of PM10 = .9600 (PM10 Emissions = PM x FRPM10)